HMAS Murchison

By George Holland HO PO RM

I commissioned HMAS *Hawkesbury* (River Class Frigate) in 1944 and served on her until mid 1946. I refer only to that experience.

We had an ex RN surface Radar E 271. Our aircraft warning set was an A 286.

The E271 was our sole gunnery range finder. The Axis had control of most of the world's optical lens manufacturers so we were without an optical rangefinder. Calibration of the E271 was effected via a screwdriver potientiometer which broadened or narrowed the single green trace on a 6 inch CR tube. During navigation trials, and often at sea, the set could be calibrated using known range objects. During gunnery trials it became a subject of controversy between the gunnery officer and the Radar mechanic, the operators would observe the fall of shot on the screen and shout out the number of yards under or over the target the shot had fallen. The big problem with the E271 was that the impact of the forward gun firing would put the set off the air completely. The early germanium diode as the detector was the first cause but later we had mechanical problems with magnetrons and rectifiers. The magnetron was in a box directly underneath the dish, all contained within the housing above the Radar cabin. The whole assembly was rotated by hand over 365 degrees then wound back. The operator read the bearing from an engraved metal ring on the connecting shaft. This made it very hard to keep track of a vessel following astern. Power cables to the transmitter and coaxial cables from the receiver were constantly swept around and back. The early British 70 ohm coaxial cable was anything but flexible and several temporary repairs had to be executed at sea in the cramped space of the Radar dome by cutting and re soldering the inner conductor and linking the outer braids with a section of a tobacco tin after carefully ironing the polythene dielectric with the hot soldering iron. The Americans only had 50 ohm cable but it worked and was more flexible so gradually I replaced all.

Then as we entered the tropics, the UK designed gear could not handle the moisture. Instead of half inch thick laminated bakelite insulation they had substituted two thicknesses of quarter inch and before long 10kv was arcing out of sight inside the panel. That took a lot of finding. I had to rig festoon carbon filament lamps inside the set to keep it dry.

For all of this we had Radar, we could monitor 70 ships in a convoy under blackout conditions. We could correct the fall of shot and maintain amazing accuracy of gunfire in surface combat. We could range on low surface reefs and land masses and we could locate a periscope at 2000 yards. Over a very short period of time the British had developed wave guide technology, the magnetron – albeit with some help from the Japanese hi permeability alloy Alnico, and microwave dish technology, all of which gave our side the advantage of working in the ultra high frequency spectrum.

Our aircraft warning Radar the A286 was a great achievement for Australian industry. All know of the rotating gramophone needles providing the transmitting pulse via the AV11 an all Australian valve designed and built by AWV the AWA valve company, the huge bedstead antenna built in the NSW Railway Workshops and set atop the mainmast. Those sets gave wonderful service.